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Personalized Heat Warning - Alert and Advising Systems for improved Health

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^b <http://www.lth.se/climapp/> (ClimApp - Free installation via Google Play and App Store)

The present talk will provide two examples on personalized heat alert-advice systems, both aiming at improving information targeting the individual to minimize negative effects of thermal stress on human health and daily day functioning.

Excess deaths during heat waves signify the importance of weather-warning systems and accompanying preventive plans for minimizing hazardous effects of extreme thermal events. However, human health and performance are affected at much lower environmental heat strain levels than those directly associated with increased mortality. This presentation will discuss and present examples of the importance for individualized, appropriate heat alert. One example from the Heat-Shield project specifically focused on occupational health and the second system developed as a smartphone application (ClimApp) with several thermal models covering a broader range of thermal scenarios to support suitable thermoregulatory behavior during challenging climatic conditions. Both systems rely on thermophysiological models and translation of general weather warnings into individual alert and personalized adaptation strategies. For a scenario representing a typical sunny summer day in southern Europe (30°C dry air and WBGT_{sun} = 27°C; equal or higher heat observed more than 80 days in Italy in 2018), an outdoor worker performing demanding manual tasks may experience high heat stress and a total sweat loss of ~ 10 liter during a work shift, while an age and gender matched indoor worker performing light manual tasks may loose only ~1½ liter over an entire day. Considering, that inter-individual and gender differences will add further variation, it becomes clear that personalized guidance on hydration and behavior to secure health is of major importance. This should be incorporated in heat-alert systems aiming at supporting workers ability, maintaining healthy and productive lives, which in addition should be considered as integrated parts of public health.